Atmos. Meas. Tech. Discuss., 6, C3220–C3222, 2013
www.atmos-meas-tech-discuss.net/6/C3220/2013/

Atmospheric Measurement Techniques Discussions

Interactive comment on "Applying receptor models Unmix and PMF on real data set of elements in PM for sources evaluation of the sea coastal side region (Southeast Adriatic Sea)" *by* D. Đorđević et al.

Anonymous Referee #2

Received and published: 5 November 2013

In the study presented by Dordevic et al., a characterization of the possible sources of TSP (?) was carried out in a coastal area (Southeast Adriatic Sea). An attempt to identify the PM sources is made using two receptor modelling techniques (UNMIX and PMF). The results obtained by both techniques are compared with the results obtained using other models like Enrichment Factors (EF) and Principal Component Analysis (PCA). From my point of view the main problem of the article, is that it is not clear what the objective of the manuscript is. It seems that both models (PMF and Unmix) are used to find a solution similar to that found in the previous article written by the authors

(Dordevic et al 2005). If that is the aim then the article does not add anything new to the scientific knowledge which already exists on this subject. If however the overall objective is to present a new attempt to identify the PM sources in the region, the article should be re-written in a different way. In this case, the results of the best solution of both models can then be compared with the result obtained using the other models. Another thing that concerns me is the use of only 11 elements for the determination of the possible sources affecting the study region. Some of the 11 sources are normally below the MDL (Co, Hg, Cd, Se), so the analysis is mainly done with 7 elements only. I am not sure that the results obtained are meaningful. This should be commented throughout article. I have serious doubts that this article is suitable for publication in this journal. I recommend a major revision of the article including a complete restructuring of the contents.

Specific comments: The abstract should be rewritten. The location of the measurements, duration of the sampling campaign, sampling time, PM inlet used should be included. The remainder of the abstract should be completed once the aim of article is clarified. The same can be applied to the introduction. Both models are described in quite a lot of detail. That can be replace for some references. Part of the introduction, like the Polissar criteria, should be in the experimental section. Depending on the aim, the rest of the introduction should be changed to include more important references. A detailed main goal should appear at the end of this section. The materials and methods section should be expanded. Detailed information about the sampling point, the PM inlet used, sampling period, etc... are needed. A description of how the models are configured is also needed (Initial operations of the Unmix model, data preparation for the PMF model, S/N ratio, Min Rˆ2, IM, IS, G-space plots, ...). A table with the data (geometric mean, max, min, standard deviation, number of samples under the mdl) should be added as well.

It is not usual to use the values of FPEAK of -0.8, -1 and -1.2 to eliminate the rotational ambiguity. An explanation for that should be added because it is not evident how you

AMTD
6, C3220–C3222, 2013

have used Fpeak and the G-space plots. What should be done is to use G-space plots of the base run to identify possible rotations in the solution. Corresponding G-Space plots of Fpeak solution factors should be examined to see if any edges viewed in the base runs are more or less evident in the Fpeak runs. Additionally, profiles and contributions should be examined for species that deviate from the base run to ensure that they are reasonable.

The conclusion should also be rewritten once the objective of the article has been clarified. The conclusion is not a summary of the results and discussion sections. It should answer the objective proposed in the introduction.

About the figures: Figure 1 is very small and the units are not present. Figure 5, 6, 7: There are some errors in the axis labels. The errors of the concentrations should be added. The caption in Figure 6 should state “four” instead of “three”.

Interactive comment on Atmos. Meas. Tech. Discuss., 6, 4941, 2013.